university of toronto
computing services

ComputerNews

UTCS

ComputerSnoop Daily

All the news. All the time. April 1, 1992

Exclusive to ComputerSnoop Daily: Spirit of Elvis Serenades Staff at Faculty of Music!

Staff at the U of T's Faculty of Music were stunned recently when the voice of Elvis reached out to them from beyond the grave. A nameless source confided to the Daily that when employees turned on their computers in the morning, a ghostly image of Elvis appeared on their screens while the King crooned "Love Me Tender" on networked machines. Those with standalone terminals were treated to "My Way."

Artist's conception of singing computer.

Big Blue Turns Green Over Pink: IBM/Apple Merger on the Rocks

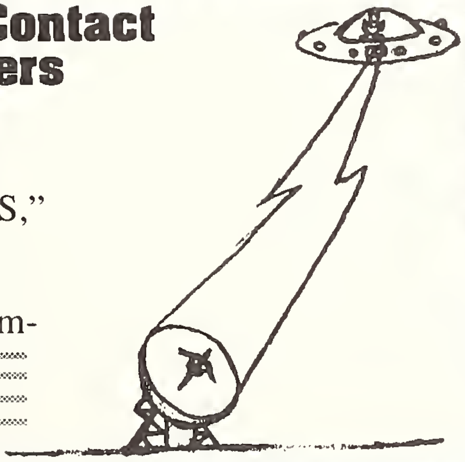
ComputerSnoop Daily's Computer Specialist, C.P.U. Mouseman, has learned that the once rosy relationship that was blossoming between Apple and IBM now stands little chance of survival. Apple's alleged involvement with a third party has sent IBM running to the lawyer's office.

"How can we possibly be expected to maintain an honest relationship with a company that will run around with any common little number cruncher?" a high-ranking IBM executive questioned.

Em Pathy, ComputerSnoop's Advice Columnist, suggests that both parties get counselling. Details on page 42.

How to tell if your neighbour is a hacker. Details inside on page 57.

Space Aliens Contact U of T Computers through U of T Satellite Dish



"Send us more TETRIS," was the message that appeared on dozens of monitors across the cam-

Michael Wilson Virus Discovered on Campus

Alert staff members at Computing Services are credited with stopping the spread of the newly-discovered Michael Wilson Virus. First encountered on a computer in the accounting department, the Michael Wilson Virus annoys users by displaying the following poem:

Canadians are we
We love the GST
Taxes are such fun
Please give us a new one
And fill us all with glee.

Exciting Features Inside

Computer Monitor an Electronic Valet? / page 13
Computer Possessed by Ghost of Reznikoff /page 36

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Many thanks to A.F. Technologies for giving us exclusive rights to publish a review of the *StaubSauger*™.

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Macworld Exposition in San Francisco

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Everyone in the Macintosh community anticipates great things from the annual pilgrimage to the Macworld Exposition in San Francisco. Over 60,000 Macintosh enthusiasts attended the Expo this year. Major attractions included QuickTime and substantial upgrades to popular Macintosh applications.

QuickTime

Editing video is now as easy as cutting and pasting text. QuickTime is a new Apple architecture that allows full motion video, animation, and music with stereo sound to be manipulated as easily as text. Static pictures can now be replaced by moving images accompanied by stereo sound, thereby creating dynamic documents and presentations. Any application that supports traditional Macintosh graphics can now include QuickTime movies. For example, resumés no longer have to be one-dimensional, but can include video "postcards" of the applicant, giving prospective employers a greater sense of the applicant's personality.

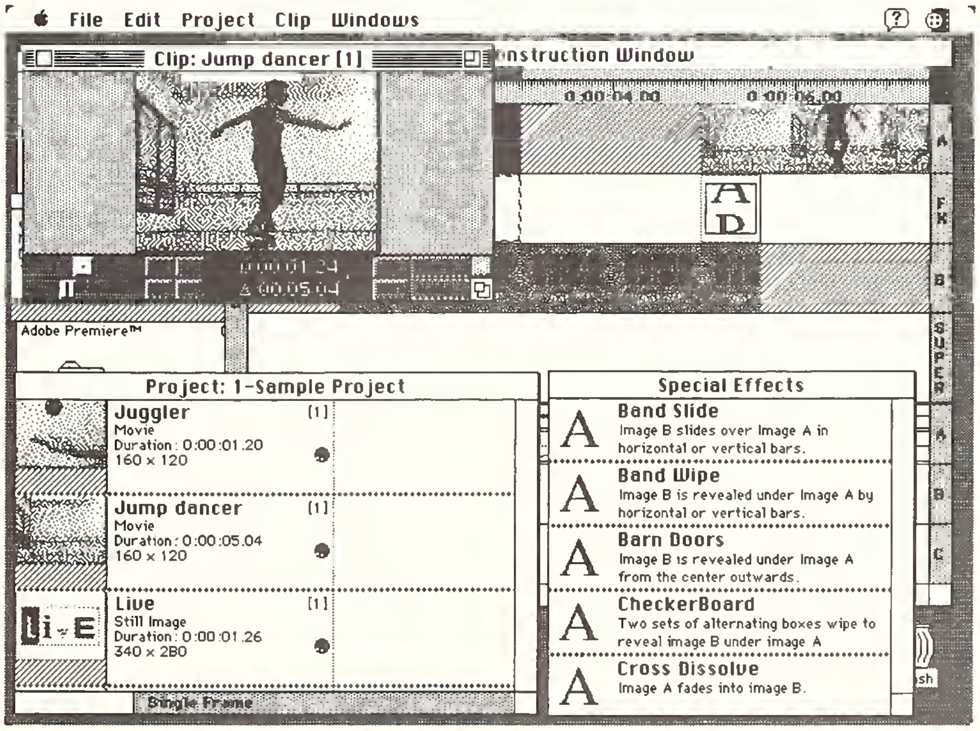
The QuickTime Architecture

The architecture contains three main components: the Movie Toolbox, the Image Compression Manager, and the Component Manager.

The Movie Toolbox deals with time-dependent data, i.e., movies. Each movie is composed of tracks, and each track contains different forms of media. Currently there are two standard media types: digitized video and digitized sound. Other types not supported at present such as MIDI easily can be added to the Movie Toolbox repertoire.

The Image Compression Manager is responsible for manipulation of both still images and image sequences. Since high quality colour stills and full motion video take large amounts of disk storage, Compression Manager provides different algorithms for squeezing QuickTime data. Among the standard compression schemes included are the Joint Photographic Experts Group (JPEG) Standard for still images, and Apple-Video for moving images. JPEG is an ISO-standard algorithm, and is very time-consuming to perform entirely in software. Also, according to the QuickTime documentation, it doesn't work as well for small or low-resolution images. That's why Apple came up with their own algorithm, Apple-Video, for video data. This doesn't compress as well as JPEG, but it works well on small images of

Creating QuickTime movies is easy. Adobe Premiere, shown below, is one of several programs designed for digital movie manipulation. It uses a "video paste-up" table to assemble, edit, and merge together digital sound, video, and special effects. The final output, a self-contained QuickTime movie, can be saved on disk or "printed" to a VCR.



Project: 1-Sample Project

Juggler [1]
Movie
Duration: 0:00:01.20
160 x 120

Jump dancer [1]
Movie
Duration: 0:00:05.04
160 x 120

Live [1]
Still Image
Duration: 0:00:01.26
340 x 280

Special Effects

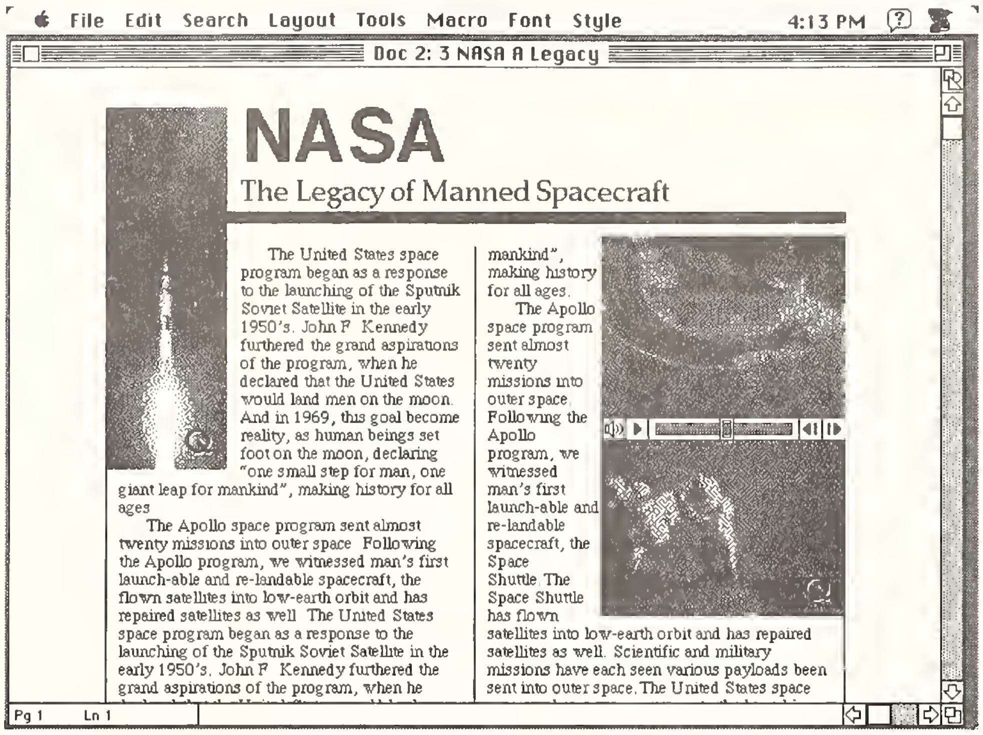
Band Slide
Image B slides over Image A in horizontal or vertical bars.

Band Wipe
Image B is revealed under Image A by horizontal or vertical bars.

Barn Doors
Image B is revealed under Image A from the center outwards.

CheckerBoard
Two sets of alternating boxes wipe to reveal image B under image A

Cross Dissolve
Image A fades into image B.



NASA

The Legacy of Manned Spacecraft

The United States space program began as a response to the launching of the Sputnik Soviet Satellite in the early 1950's. John F Kennedy furthered the grand aspirations of the program, when he declared that the United States would land men on the moon. And in 1969, this goal become reality, as human beings set foot on the moon, declaring "one small step for man, one giant leap for mankind", making history for all ages

The Apollo space program sent almost twenty missions into outer space Following the Apollo program, we witnessed man's first launch-able and re-landable spacecraft, the flown satellites into low-earth orbit and has repaired satellites as well The United States space program began as a response to the launching of the Sputnik Soviet Satellite in the early 1950's. John F Kennedy furthered the grand aspirations of the program, when he

mankind", making history for all ages.

The Apollo space program sent almost twenty missions into outer space. Following the Apollo program, we witnessed man's first launch-able and re-landable spacecraft, the Space Shuttle. The Space Shuttle has flown satellites into low-earth orbit and has repaired satellites as well. Scientific and military missions have each seen various payloads been sent into outer space. The United States space

QuickTime allows the WordPerfect document at left to incorporate moving images as well as still images.

around 160 * 120 pixels (which seems to be a standard size that Apple is recommending for many common uses), and it will decompress images of this size fast enough to play back 10-12 frames per second in real time, even on a Macintosh LC.

The Component Manager is an interesting addition to the core system software. It allows you to install pieces of software, called "components," to perform various useful services not restricted to QuickTime. Within QuickTime, image compressors and decompressors are implemented as classes of components. Movie media handlers are another class, as are video digitizer drivers. Components can be installed at any time, for example by running applications, not just at system startup.

The main piece of bad news about QuickTime is that it will only work on colour-capable Macintoshes, and those with a built-in 68020 CPU or better; that is, a Macintosh LC or better.

Providing this base for every system, Apple hopes to persuade developers to included more QuickTime support in future applications, since almost every Macintosh will be capable of running QuickTime without any additional expense or hardware.

Vendors are now beginning to include QuickTime support for their applications, one example being DeltaPoint with its popular graphing and presentation package, DeltaGraph Professional. With it you can use QuickTime movies to emphasize points in presentations, e.g., moving graphs and charts which show changes in values over time.

For programs that support only PICT, Apple France has created a system extension called WildMagic. This allows any Macintosh application supporting PICT, such as Microsoft Excel, to play QuickTime movies.

Creating QuickTime movies is easy. Necessary equipment includes any consumer video camera or VCR, a suitable digitizing card, and compatible software. At Macworld 1992, the combination that generated the most interest was SuperMac's Video Spigot, Adobe's Premiere, and a Sony Handycam. Excluding the camcorder, the total cost of the starter setup is less than CAN$500. For the educator, it is an economical way of bringing multimedia into the classroom, and for the amateur videographer, QuickTime represents a quick and inexpensive way of creating flashy home videos.

The following are examples of how QuickTime can be used:

Education

QuickTime movies and animations are featured in an interactive feature magazine at Syracuse University. Syracuse's interactive magazine, created in HyperCard and Director 3.0, will be available on the campus-wide network this fall. A forthcoming project includes an Architectural Digest, an interactive walkthrough of the main campus.

Training

An airplane engine manufacturer is using QuickTime movies in a HyperCard-based electronic manual for factory mechanics. Technicians use HyperCard stacks to learn about assembly procedures instead of flipping through paper manuals. The electronic manuals include QuickTime movies and traditional Macintosh graphics with a scrollable window for instructional text.

Presentations

Ben & Jerry's ice cream company is using QuickTime movies in a

Macintosh-based presentation for the 300,000 tourists who visit the company's Waterbury, Vermont ice-cream factory each year. The interactive presentation, created with DiVA Corp.'s VideoShop and HyperCard, takes visitors on an electronic tour of the factory, provides a history of the company and includes an on-screen form for ordering gifts, T-shirts, and ice cream. The keynote session at Macworld 1992 included a brief demo of the stack, along with a special QuickTime movie postcard from the company founders, the real Ben and Jerry.

New Features, Old Faces

With all the excitement over the new QuickTime architecture, we should not overlook the sometimes small, but nonetheless important changes made to more familiar Macintosh applications. Most noteworthy were the upgrades from Microsoft and Claris, and the arrival of Lotus 1-2-3 for the Macintosh. Oracle, Blyth, and Acius also showed up with new database features.

Word Processing and Desktop Publishing

Microsoft Word's first major upgrade in a couple of years was on display. Judging from the crowds surrounding the Microsoft booth, users were fascinated by Word 5.0's new features. Most questions centred around Word's "open architecture" (i.e., the ability for the user to install various functions in the word processor by dragging required components into magic extensions folders). The file find/search feature was of major interest. Word has the ability to search all its files anywhere on the desktop for words and phrases. For example, one could search for all files containing the phrase "Gothic cathedrals", and documents that include the phrase would be presented for review.

MacWrite Pro was once again demonstrated in the Claris booth. The latest estimate on its release date is late summer 1992. When completed, MacWrite Pro will include all sought-after text processing features such as tables, style sheets, and macro language scripting.

In desktop publishing, Aldus produced fractional improvements to PageMaker from version 4.1 to 4.2.

Spreadsheets

Previous competitors have not threatened Microsoft Excel's position as spreadsheet leader. However, that may change. Lotus Corporation was exhibiting Lotus 1-2-3 for the Macintosh, except this time one could actually purchase the product. Early observations indicate that 1-2-3 will not appeal to the hard-core Excel aficionados; however, to users migrating from the PC to the Macintosh, 1-2-3 will be a welcome, comfortable, and familiar environment.

Claris Resolve, based on Wingz, the first Macintosh spreadsheet to feature the ability to incorporate graphs on the worksheet page, fully integrates with other popular Claris programs. For example, one could produce a report in MacWrite Pro and include a chart created in Resolve from data originally maintained in MacProject, all done automatically with System 7 Apple Events and Inter-Application-Communication (IAC).

Database

All major database players displayed their wares. Acius was running the 4D Server program, reporting a 20 to 400 fold improvement in database access speed. The 4D Server program is a stand-alone application requiring a dedicated Macintosh computer. Blyth Software showed Omnis 7, a System 7-savvy improvement to Omnis 5. On the high end, Oracle Corporation rolled out a host of Macintosh development tools and a new version of the Oracle Server for the Macintosh, now fully compliant with Oracle version 6.0.

A disappointment again was Fox Software and their inability to complete the much needed FoxPRO/Macintosh.

Personal Information Managers

This year the favourite Macintosh applications were the Personal Information Managers (PIMs). The new Macintosh PowerBooks must have reignited this phenomenon. Today's must-have feature for PIMs is the ability to exchange data with pocket electronic organizers. Another important feature was the ability to send alarms or reminders to users through any network media imaginable. The most popular option here was the pocket pager. This is a portable device which allows you to receive mail messages sent from a computer via a modem to a number specific to your pager. The message appears on a tiny screen on your pager.

Innovative and unusual products were also in abundance, among them Macintosh video teleconferencing and paging devices triggered by Apple Events-based software. Many users will finally see some real-life applications that use the much-talked about Inter-Application-Communication (IAC) feature found in System 7.

For more information on products exhibited at Macworld Expo 1992, contact Dariusz Dabek at 978-6878 or via electronic mail to *dabek@utcs.utoronto.ca*.

LAN Security

Wilfred L. Camilleri
Security Administration Manager
Systems Development

Local Area Networks (LANs) make information and computing resources readily available throughout an organization. LANs also enable groups of users to share resources and communicate with each other more effectively. They are designed to be user friendly and there is a lot of flexibility built into their operating systems. Unfortunately, this often leads to situations where LANs are set up with little centralized control or planning. This can result in very loose or in some instances no consideration being given to the security of the LAN and the information stored and processed on it.

LAN administrators are normally given a wide choice of options in setting up the security of the LAN, and without careful planning, the administrator may inadvertently leave the LAN and its users wide open to attacks from unscrupulous users.

Third party access control and security software is also available for most LAN environments. If the LAN is being used to process and store production, confidential, or sensitive data, you should consider implementing an access control package on your LAN. If you require assistance or if you wish to discuss LAN security further, please contact the Manager, Security Administration, UTSD at 978-1267.

Assessing Your LAN's Security

The level of a LAN's security depends on a number of factors, such as:

- The security features of the LAN operating system.
- The security features of individual applications.
- The physical protection of resources (e.g., LAN server, workstations, backup media).
- The presence of links to remote users, whether through other LANs or dial-in modems, and the protection afforded to those links.
- The access users have to the LAN (e.g., the information they have access to, the information they share, their knowledge).

All these factors should be considered when assessing the security of a particular LAN. Assessing the security requirements of the LAN is especially important if it is going to be used for business or registrarial applications or if confidential and/or sensitive information is being processed and stored on it.

The following checklist provides a navigable road map for administrators to evaluate and adjust the security of their LAN. Not all requirements listed are applicable to all LAN environments. Review the requirements listed and identify the ones that apply to your LAN. Once you have identified the applicable requirements, use them to evaluate your LAN and make any changes necessary to enhance its security. The checklist is divided into eight categories: User Identification and Authentication, Access Controls, Guest Accounts, Security Administration, Backup and Recovery, Physical Security, Virus Protection, and Miscellaneous.

PC LAN Security Checklist

User Identification and Authentication

This is the ability to identify the user to the system and to confirm the claimed identity of the user. The user identifies himself/herself to the system by entering a User ID, usually consisting of the user's initials. The user's identity is confirmed when the user enters his/her confidential password.

Considerations:

- ✓ Assign each user his or her own unique ID. Each user should only have one User ID.
- ✓ Assign each user his or her own confidential password.
- ✓ Passwords should be encrypted and known only to the user.
- ✓ The minimum password length should be six characters.
- ✓ The password change frequency should be set at thirty days.
- ✓ Make sure that users can only choose unique passwords (i.e., users should not be able to pick the current password as their new password when the system requires them to change it).
- ✓ The number of grace login days following the expiry of the current password should not exceed five days.
- ✓ Limit the number of consecutive unsuccessful login attempts to a maximum of five attempts.
- ✓ Make sure that the password is not echoed back to the screen (i.e., the password should not be displayed on the screen when it is entered).
- ✓ Delete passwords and access for users whose accounts are being terminated.
- ✓ Cancel old passwords and reissue passwords for users who forget theirs.
- ✓ Prevent all input to the server without a valid ID and password (mouse input as well as keyboard).

Access Controls

Access controls are defined for and assigned to specific data files, utilities, resources, and other system privileges. Access controls can be specific to individual users or to a group of users. In a LAN environment, you should:

- ✔ Make sure that users have access only to those directories they need to perform their job. Only give users the rights (e.g., READ, WRITE, CREATE, DELETE, PURGE, FILE SCAN, etc.) they need to do their job for each directory to which they are given access.
- ✔ Make sure that Trustee rights are the minimum required for the user to do his/her job. Once a right is no longer required, remove it immediately.
- ✔ Consider and assign the minimum file access attributes (i.e., EXECUTE only, READ only, READ/WRITE).
- ✔ Be careful when assigning SHAREABLE, NON-SHARABLE and HIDDEN file attributes. Files containing confidential or sensitive information should be restricted to a minimum number of users.
- ✔ If you enable an account on a temporary basis, make sure that the account is disabled when it is no longer required.
- ✔ With the exception of the LAN Administrator and his/her backup, users should not be allowed concurrent sign-on privileges (i.e., the ability to use more than one workstation at the same time).
- ✔ Allocate disk space carefully. Giving users unlimited disk space may result in the need for purchasing additional disk capacity.
- ✔ Consider restricting users to specific workstations.
- ✔ Consider using time restriction features to control access during non-business hours.
- ✔ Restrict network commands (e.g., FLAG, HIDEFILE, SECURITY, PAUDIT, etc.) to those users who have a need for them.

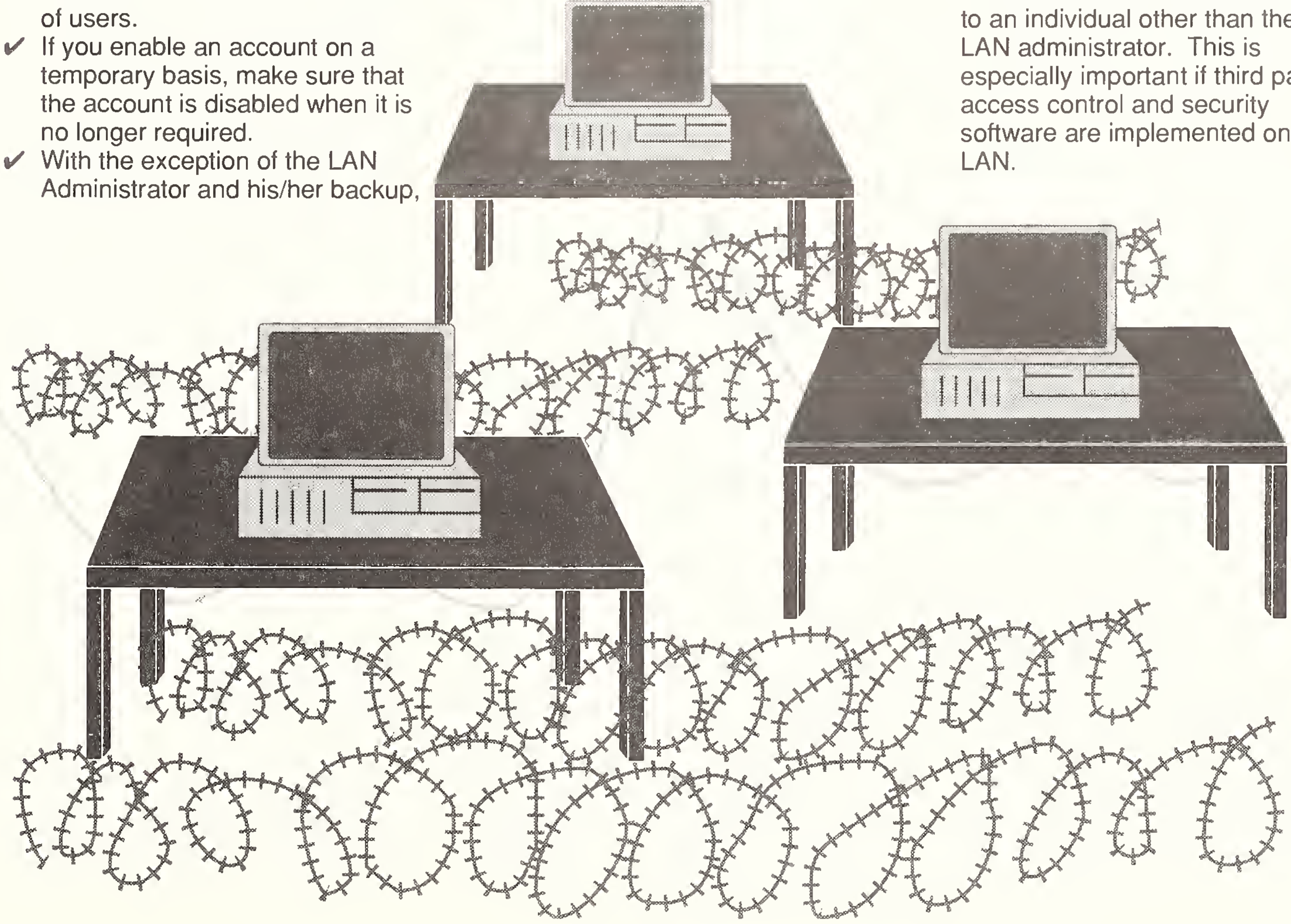
Guest Accounts

- ✔ Limit the number of guest accounts on the system to the absolute minimum.
- ✔ Consider the files and services available to guest accounts carefully. Guest accounts should not have the same privileges as normal accounts.
- ✔ Do not allow an invalid sign-on to default to a guest status.

Security Administration

Assigning administration responsibilities for the LAN is absolutely necessary to maintain LAN security. The LAN administrator should be aware of his/her responsibilities vis-a-vis administration of the LAN, as well as its security and the integrity of the data and information stored and processed on it.

- ✔ Provide the administrator with the proper training, including security issues related to the LAN.
- ✔ Identify an individual as a backup to the administrator.
- ✔ If possible, assign responsibility for administration of LAN security to an individual other than the LAN administrator. This is especially important if third party access control and security software are implemented on the LAN.



Features

Backup and Recovery

Backup and recovery of databases in a mainframe environment are mostly automated processes. Unfortunately a LAN environment is not always as stable as a mainframe environment; therefore, it is very important that backup and recovery requirements are identified and implemented.

Considerations:

✔ Run scheduled, unattended backups of the server.
✔ Establish scheduled server-initiated backups of workstations over the network.
✔ Establish a rotation schedule for backup tapes and maintain several generations of backups.
✔ Generate at least two copies of the server backups. One copy should be available on-site in case recovery is required. Another copy should be stored in an off-site location in case of a fire or some other contingency.
✔ Consider mutual agreements with other departments for off-site storage of backup tapes.
✔ Store backup tapes in a data safe. (Data safes are fire-resistant safes specially designed to protect magnetic media from damage caused by fire, heat, water, and air-borne contaminants such as smoke and dust.)
✔ Restrict backup and recovery functions to the administrator and his/her backup.
✔ Employ various backup techniques including full and incremental backups.
✔ Make sure that the entire server operating system, as well as data files, are recoverable from backup tape.
✔ Consider server backup requirements carefully. Mirroring (i.e., writing data to two separate hard drives simultaneously) and duplexing (i.e., installing two hard drive control cards) may not be sufficient if you are running production and time-sensitive systems on the LAN. A hot-backup arrangement (i.e., having two servers working in tandem in case one server fails) could provide you with sufficient security.

Physical Security

Physical security of the LAN, including the server and workstations, is critical to the overall security of the LAN, but is often overlooked. It is important that the access to critical pieces of equipment is restricted to a small number of individuals (usually the administrator and his/her backup.) Other considerations should include protection of the equipment against fire and electrical hazards.

Considerations:

✔ Consider installing an Uninterruptible Power Supply (UPS) system to protect the server against power failures, power surges, and other similar occurrences.
✔ Provide workstations with power bars that have built-in surge protection circuitry to protect against damage caused by sudden and extreme power fluctuations.
✔ Secure the server by locating it in a locked room to which access is limited.
✔ Beware of housekeeping and maintenance personnel unknowingly disabling the network by unplugging the server to plug in their equipment.
✔ Provide users with locking and anchoring mechanisms for their workstations, especially in areas open to access by the public.

Virus Protection

Virus infections are becoming increasingly widespread. A virus infection may be, at the least, an annoyance to the users of personal computers and LANs. However, in some instances, a virus may end up costing the user a lot of time through destruction of data or by preventing the user from being able to access the data stored on a hard drive.

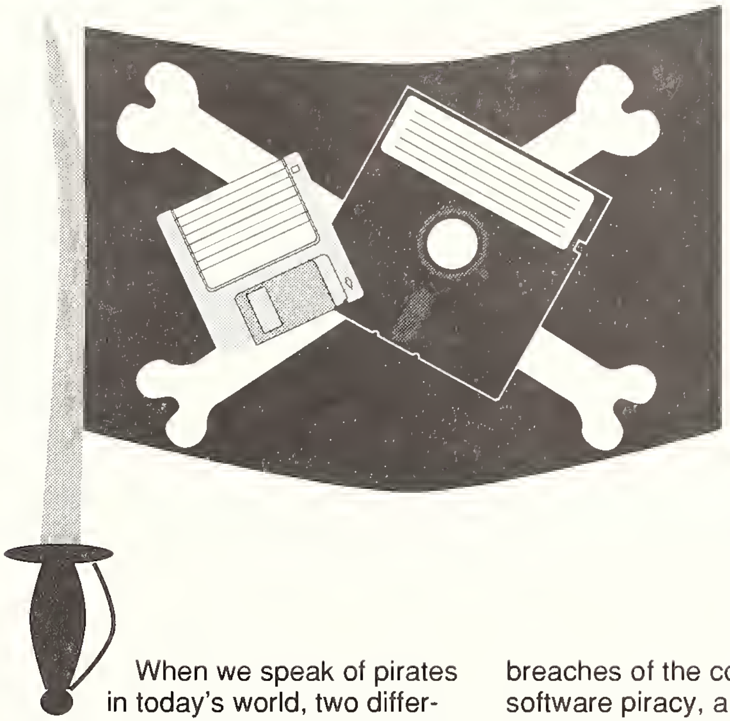
Considerations:

✔ Scan the server for RAM-resident and passive viruses.
✔ Provide users with scan and clean programs so that they are able to check their hard drives and diskettes for known viruses.
✔ Consider giving users diskless workstations to prevent viruses from infecting the LAN.

Miscellaneous

✔ Consider implementing encryption software to protect confidential or sensitive data stored on the server or data being transmitted over the network. Encryption software enables you to scramble the data so that it cannot be read by unauthorized individuals.
✔ When highly proprietary information is accessed, temporarily disable local disk drives, printers, and communication ports to prevent downloading or transferring the information.
✔ Be careful before allowing dial-in access to the LAN. If there is a real need for dial-in access, use a call-back facility at a minimum. If the LAN is used for production systems (e.g., business application systems) or if it is connected to the central administrative mainframe, special measures must be taken before dial-in access is allowed.
✔ Restrict installation of unauthorized software on the LAN. Establish a procedure by which the LAN administrator is notified and is involved in the review and installation of personal software on the LAN.
✔ Ensure that users are aware that pirated software should not be installed or used on the network.
✔ Ensure that the LAN administrator or some other individual is assigned the responsibility of reviewing system-generated audit reports. Develop review and reporting procedures especially for access violation reports.

Software Piracy



> *The University of Oregon Continuation Center settled a copyright lawsuit with the Software Publishers Association* ***to pay $130,000*** *as well as organize and host a national conference on copyright law and software use. This was the first software copyright suit brought against a higher education institution. The federal suit was filed against the school in February 1990 on behalf of several software vendors, including Lotus Development Corp., Microsoft Corp., and WordPerfect Corp. The suit alleged that the center employees made unauthorized copies of the software companies' program [sic] and training manuals.*
>
> — *Ledger,* Association of College and University Auditors, Nov. 1991

When we speak of pirates in today's world, two different visions come to mind. The first is of a latter-day swashbuckling ruffian who captures cargo ships and steals the riches and wealth aboard for himself. The second is a person who copies software from a source to their own PC, without purchasing it from a legal vendor. We may see both as underdogs, fighting the injustice of "the system," while remaining worthy at heart, and therefore somehow admirable. No wonder software piracy is not viewed as a crime by most people.

In fact, software piracy is a crime. It is theft.

When a software package is purchased from a legal vendor, a contract exists between the vendor and the purchaser. This contract, called a licence, can be found in various places: in the instruction manuals, other documentation, or on the disk itself. Most people believe that once they have purchased the software, they own it. This is not quite true. In fact, what has been purchased is the licence which allows the purchaser to use the product. The software company still owns the product. This lack of understanding often leads to breaches of the contract through software piracy, and in many cases the culprits are not even aware of the illegalities of their actions. Sometimes, just breaking the seal of a disk package constitutes a legal and binding acceptance of the licence's conditions.

Don't make U of T the target for the next search warrant. The embarrassment that would be caused by a lawsuit would be damaging to the reputation of the University, and the fines can be very expensive. Don't be fooled into thinking that only the University will be liable and have to pay. Depending on policies in place within your department, you too might be liable.

What follows are some common situations that will test your knowledge of what is legal and what is not when it comes to software duplication.

Situation #1: A software program has been purchased by an office for one of its employees. Other employees in the same office hear of the program and discover that it would be great to help them in their work. Can legal copies be made?

Answer: No, legal copies cannot be made. Many people make this mistake, believing that as long as the program is for company business, the use of it within the workplace is legal. Most licence agreements require that each machine or workstation that uses the program must have a *purchased* copy of that program.

Situation #2: A computer which "belonged" to the employee you are replacing is now yours. All sorts of wonderful programs are on it and you assume that they are legal copies. If you are audited and are found to have illegal software on your machine, are you responsible?

Answer: You may be responsible, depending on policies within your department. Just because somebody else put the software on the machine doesn't mean that you are blameless. Essentially, you turned a blind eye and benefited from the existence of the software on the machine. Ways to determine whether or not your software is legal are: check to see if official documentation exists for your machine; check to see if there are any official diskettes for the program; check for official templates on your computer keyboard. If none of these three exists, be prepared to find out that the software is illegal. You may want to speak to the person in your department who keeps track of purchasing software for more information on the programs installed on your machine.

Situation #3: The office operates on a network. Since one person has a legal copy of a software program, and has installed it on the network, everyone is allowed to use it. True or False?

Answer: Either answer may be correct, depending on what the software licence says. Some licences are strict and insist that every person who uses the program, whether it be on a network or not, must purchase the program. Some software companies sell site licences, and these allow everyone on the network to use the program without purchasing copies for each individual who will use it.

Situation #4: An update for your spreadsheet program arrives. Your co-worker has been asking you for a copy of the program, but you know that it is illegal so you refused. But now that the new version has arrived, and you have no need for the old version, can you give it to your co-worker?

Answer: No. Updates are defined as enhancements to the original package that you purchased. Once the package has been updated, the old package should be destroyed or used solely as a backup.

Situation #5: You have a big presentation to give tomorrow and, as five o'clock rolls around, you realize that you have to be home to baby-sit your children, Once the kids are settled in bed, can you use the software from the office on your home machine?

Answer: Maybe. Again, it depends on what the software licence says. Some licences say that software can be used both at home and at the office. Some say that the program can be used on several machines, provided that no two are running at the same time. Some programs are very restrictive, and say that the program can only be used on one machine. If you don't have access to the licence, or if you find it ambiguous or unclear, make sure you check with someone such as a technical support person, about the details before you copy anything.

If you find yourself in a situation like this and don't know the answer, someone else does. The Software Publishers Association operates a toll-free hotline number through which you can access information about how to order an anti-piracy video or a self-audit kit, or just get some anti-piracy information. The number is: 1-800-388-7478. The Canadian Alliance Against Software Theft (416-598-8988) is an additional source of information.

[Editor's Note: This article, written by Wendy Alexander and Teresa Tenisci, was adapted from *Campus Computing*, the University Computing Services newsletter at the University of British Columbia, January 1992, Volume 7, Number 1.]

The pamphlet *Using Software: A Guide to the Ethical and Legal Use of Software for Members of the University Community* is available from the UTCS Information Office, 4 Bancroft Avenue, Room 201. You are welcome to take multiple copies for distribution within your office or department.

Half Price Manuals Sale!

Patricia Hood
phood@vm.utcs.utoronto.ca

The UTCS Information Office has a limited number of manuals that it is selling at half the original price. Most of the manuals document older versions of software presently used at U of T. The SAS manuals, in particular, are a bargain for those of you using SAS version 5 on the mainframe. Since the quantities are limited, please contact the Information Office at 978-4990, as soon as possible, to reserve your purchases. Purchases may be paid by cash, cheque, UTCS Customer Account (CAN), or U of T Appropriation Account.

Title	Sale Price
SAS Introductory Guide, Third Edition	3.75
SAS/ETS User's Guide, Version 5 Edition	12.25
SAS/FSP User's Guide, Version 5 Edition	17.00
SAS/IML User's Guide Version 5 Edition	11.40
SAS/GRAPH User's Guide, Version 5 Edition	19.50
SAS Companion for the CMS Operating System, 1986	5.00
SAS Companion for the OS Operating System and TSO	6.75
SAS System for Linear Models, 1986 Edition	10.00
SAS System for Regression, 1986 Edition	9.00
LISREL User's Guide	2.50
MINPACK-1 User's Guide 1980	2.50
WATCOM C Library Reference 1989	11.90
WATCOM C Language Reference 1987	10.40
WATCOM C Optimizing Compiler and Tools User's Guide 1987	10.40
WATCOM Express C User's Guide 1987	7.90

INTERNET NOTES

Herb Kugel
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How You Can Obtain INTERNET Documentation: RFCs and FYIs

Obtaining documentation about the INTERNET is an ongoing problem. The system is constantly being changed, but there is a series of documents called RFCs (Requests for Comment) and FYIs (For Your Information) which can be very helpful. These describe the internal workings of the INTERNET. The most useful, and absolutely necessary ones for beginners are:

RFC-1118	The Hitchhiker's Guide to the Internet
RFC-1175	A Bibliography of Internetworking Information
RFC-1206	Answers to Commonly asked "New Internet User" Questions
RFC-1207	Answers to Commonly asked "Experienced Internet User" Questions
RFC-1208	Networking Glossary of Terms
RFC-1290	There's Gold in Them Thar Networks! or Searching for Treasure in All the Wrong Places

These publications can be obtained from quite a number of remote FTP sites, but the Network Information Center (the 'NIC') in the USA may be preferred because there is also a great deal of other information available at the same site as shown by the directories named below. The following is the actual script of the dialogue between you and the FTP NIC machine to obtain the RFCs listed above. The text that you are to type is preceded by a pointing hand (☛).

```
gpu.utcs%                                   ☛ ftp nic.ddn.mil
Connected to nic.ddn.mil.
220-*****Welcome to the Network Information Center*****
    *****Login with username "anonymous" and password "guest"
    *****You may change directories to the following:
      ddn-news          - DDN Management Bulletins
      domain            - Root Domain Zone Files
      ien               - Internet Engineering Notes
      iesg              - IETF Steering Group
      ietf              - Internet Engineering Task Force
      internet-drafts   - Internet Drafts
      netinfo           - NIC Information Files
      netprog           - Guest Software (ex. whois.c)
      protocols         - TCP-IP & OSI Documents
      rfc               - RFC Repository
      scc               - DDN Security Bulletins
220 And more.
Name (nic.ddn.mil:herb):                    ☛ anonymous
331 Guest login ok, send "guest" as password.
Password:                                   ☛ Herb              (Type your account name
                                                                         or logon id)
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>                                        ☛ type ascii
200 Type set to A.
ftp>                                        ☛ cd rfc
250 CWD command successful.
ftp>                                        ☛ get rfc1118.txt
```

```
200 PORT command successful.
150 Opening ASCII mode data connection for rfc1118.txt (61446 bytes).
226 Transfer complete.
62792 bytes received in 7.1 seconds (8.7 Kbytes/s)
ftp>                                         ☛ get rfc1175.txt
200 PORT command successful.
150 Opening ASCII mode data connection for rfc1175.txt (94417 bytes).
226 Transfer complete.
96829 bytes received in 13 seconds (7.2 Kbytes/s)
ftp>                                         ☛ get rfc1206.txt
200 PORT command successful.
150 Opening ASCII mode data connection for rfc1206.txt (70685 bytes).
226 Transfer complete.
72479 bytes received in 7.2 seconds (9.9 Kbytes/s)
ftp>                                         ☛ get rfc1207.txt
200 PORT command successful
150 Opening ASCII mode data connection for rfc1207.txt (32543 bytes).
226 Transfer complete.
33385 bytes received in 4.4 seconds (7.4 Kbytes/s)
ftp>                                         ☛ get rfc1208.txt
200 PORT command successful.
150 Opening ASCII mode data connection for rfc1208.txt (40146 bytes).
226 Transfer complete.
41156 bytes received in 9.6 seconds (4.2 Kbytes/s)
ftp>                                         ☛ get rfc1290.txt
200 PORT command successful.
150 Opening ASCII mode data connection for rfc1290.txt (46997 bytes).
226 Transfer complete.
48511 bytes received in 4.8 seconds (9.9 Kbytes/s)
ftp>                                         ☛ bye
221 Goodbye.
```

The above documents contain a vast array of information about various topics, including information on what may be found in some of the other NIC directories listed above. You might want to browse the NIC directories in the areas of your interest. The easiest way to do this is to use the list (ls) command as it applies to FTP and obtain a listing of the directory. The format of this command is:

```
     ls remote-directory local-file
```

So, to obtain a list of all the RFC and FYI documents and place this information in your file 'rfc.dir.list' you would:

```
ftp>                                         ☛ ls rfc rfc.dir.list
output to local-file: rfc.dir.list?          ☛ yes
200 PORT command successful.
150 Opening ASCII mode data connection for /bin/ls.
226 Transfer complete.
ftp>                                         ☛ bye
```

In the above, you should be in the home directory of the NIC machine. Do not change directory to 'rfc' and then give the command. Also, 'rfc.dir.list', the output file, should not be an existing file.

Once the list command has completed and you have left the FTP, you may use an editor to browse 'rfc.dir.list' for titles and other information. Of special interest in the 'rfc' directory are the files:

```
fyi-by-author.txt
fyi-by-title.txt
fyi-index.txt
rfc-by-author.txt
rfc-by-title.txt
rfc-index.txt
```

These files, which may be obtained through FTP in exactly the same way as those shown above, contain complete descriptions of the RFC and FYI documentation available. If you have any questions, please write *herb@gpu.utcs.utoronto.ca*.

Nutritional Information on INTERNET

Do you have questions on diet or nutrition? The Cornell University Electronic Information Source Center maintains a dialog server that allows users to ask questions about diet and or nutrition and to have these questions answered within two weeks. To obtain and use this service simply enter:

```
telnet cuinfo.cornell.edu  300
```

You will see a main menu. Select DIALOGS from that menu, then enter NUTRI and follow the easy-to-use directions.

INTERNET Growth

The INTERNET, a network of networks, has grown dramatically over the last decade. How dramatically? Mark Lotter of the Network Information Systems Center at SRI International (one of the pioneer companies associated with the INTERNET) has been addressing this question.

In 1986, he wrote a program called ZONE (Zealot Of Name idEntification), a sophisticated package that collects data from all across the INTERNET. According to the author, the program has been known to take a week to complete and the data collected by it can easily accumulate into the 50 megabyte range. Because of these constraints, it is run only every three months...and one can see why.

ZONE, together with a study of the SRI archive tapes for the period between 1981 and 1985, has resulted in the production of some mind-boggling statistics.

In August 1981 there were 213 hosts (names of machines) on the INTERNET; in January 1992 there were 727,000 hosts on the INTERNET. Domain name statistics are available from July 1988 (900 domains) through January 1992 when there were 17,000 domains on the INTERNET.

ZONE even collects host names of machines. Currently the leaders are Venus (384), Pluto (356), Mars (323), Jupiter (288) and Saturn (286.) The Seven Dwarfs are popular, too: Grumpy (167), Sleepy (158), and Dopey (145.) The dwarfs beat Spock (142) which might disappoint Star Trek fans.

The point is, with the INTERNET growing as fast as it is, it must offer something for a great many people. If you have not used the INTERNET, we can help.

Please write *herb@vm.utcs.utoronto.ca* if you wish further information about the INTERNET.

Help from Advising & Consulting

Martha Parrott
parrott@vm.utcs.utoronto.ca

One of the hottest topics on the UTCS Help line (978-HELP) is communications. More and more of you are eager to use your microcomputer and a modem to exchange information and data with friends and colleagues, or to access the online library services available on and off campus. As you may know, UTCS distributes two communications packages: ProComm for IBM PCs and compatibles, and MacKermit for the Macintosh. You may obtain one of these by bringing your own formatted diskettes (two 360KB or one of any other size) to the Help Desk at 4 Bancroft Avenue, Room 201, Monday through Friday between 12:00 noon and 6:00 p.m. When you come, the Advisor at the desk configures your copy of ProComm or MacKermit to suit the service of your choice and demonstrates the use of the product. Although both products come with online manuals, you may find you need some last minute help when the time comes to "fly solo."

As an experiment in saving everyone some time, the UTCS Advising and Consulting group is developing a series of pamphlets to answer the questions most commonly asked about using ProComm or MacKermit with a modem to access the UTCS mainframe services and the University Library services, FELiX and MEDLINE. They are not intended as full documentation, but only as quick reference sheets to remind you of the essentials. So far, we have completed those covering ProComm. They are available from the Help Desk, but this issue of *ComputerNews* also has copies opposite this article that you can cut out and save for your future adventures in electronic communication. If you have any comments or suggestions about these publications, please call Martha Parrott at 978-5071. If you have questions about ProComm or MacKermit, please call 978-HELP during the hours mentioned above.

Microcomputer Short Courses

UTCS offers various noncredit microcomputer courses to faculty, staff, and graduate students of the University of Toronto. These courses cover a number of software programs available for the PC or the Macintosh. Whether you will be typing a thesis on a word processor, or working with spreadsheets, databases, or desktop publishing, we may be able to help you get started.

Our class sizes are small to allow for much individual attention. In most cases, continuing support is available upon completion of a course.

The following is a list of the microcomputer courses taught at UTCS:

- Introduction to dBASE IV
- Introduction to Disk Operating System (DOS)
- Electronic Mail Seminar
- Excel on the Macintosh
- Introduction to FoxBASE+/Mac 2.0
- Introduction to HyperCard
- Introduction to Lotus 1-2-3
- Introduction to PageMaker
- ProComm Communications Seminar
- Introduction to SAS on the PC
- Intermediate SAS - Data Processing
- Intermediate SAS - Statistics
- SAS/Graph Seminar
- Microsoft Word on the Macintosh
- Introduction to WordPerfect 5.1
- Advanced WordPerfect 5.1 Topics

To find out about course dates and registration procedures, or to book a place in any of these courses, please contact Irene Rosiecki at 978-4565. Courses are filled on a first-come, first-served basis. The more popular courses fill up quickly, but waiting lists are maintained in case of cancellations.

Irene Rosiecki
rosiecki@vm.utcs.utoronto.ca

Select the number of the option containing the setting appropriate to the service you want. For example:

☛ **3 <Enter>**

To exit from the configuration menu, press <Esc>. When you return to the main ProComm screen, the status line at the bottom will show the settings you have chosen.

- You may also have to go to the Setup Menu to choose the terminal emulation suitable for the service you want. Correct emulations for the services available to you are summarized in the chart at the end of this section. To select an emulation, press:

☛ **<Alt><s>**

☛ **2 <Enter>**

☛ **1 <Enter>**

and then use <Tab> or <Space bar> to see the various emulations.

Summary of Settings for UTCS and Library Services

	CMS	GPU	FELiX	MEDLINE
Line Settings <Alt><p>	2 1200 bps 3 2400 (E71)	2 1200 bps 3 2400 (E71)	8 1200 bps 9 2400 (N81)	8 1200 bps 9 2400 11 9600 (N81)
Terminal Emulations <Alt><s>	IBMASYNC	VT-100	IBMASYNC or VT-100	VT-100
After CONNECT prompt	<Enter>	<Enter>	;	;

E. Getting Help

If you encounter problems that you cannot solve by reading the documentation for your modem and for ProComm, you may call 978-HELP (978-4357) between 12:00 noon and 6:00 pm Monday through Friday.

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Accessing University of Toronto Services through ProComm

March 1992

This is meant to be a quick guide to accessing UTCS or Library services through an IBM or IBM-compatible microcomputer using a Hayes-compatible modem and the version of ProComm distributed by UTCS. It does not replace the full documentation for either the modem or ProComm. Commands you are to type appear in bold, preceded by a ☛. Function or other control keys appear in angle brackets; for example, <Return> means "press the Return key."

***WARNING:** If the telephone line you will be using with your modem is equipped with Call Waiting, an incoming call while you are connected can cause your modem to disconnect during your session. Some exchanges provide ways of temporarily disabling Call Waiting; you will have to check with Bell Canada to determine whether you can do this.*

2nd ed.

A. Read through this document, BEFORE you begin.

B. Start your system

1. Turn on your computer and your modem.
2. After your computer has completed its standard boot-up sequence, start the ProComm program by:
   a. changing to the directory in which the program resides (e.g. C:\PROCOMM):

      ☛ **cd \procomm <Enter>**

   b. entering the program name after the DOS prompt:

      ☛ **procomm <Enter>**

C. Connect to PACXNET

For all services, you will be connecting through a communications service called PACXNET.

1. You will use ProComm's Dialing Directory to enter the dial-in number for your modem's speed. To get to the dialing directory, press

   ☛ **<Alt><d>**

   from the ProComm screen.
2. There are two ways to dial a number.
   - In copies of ProComm distributed by UTCS, the dialing directory already contains a list of numbers and setups tailored for certain U of T services. You may select one of these simply by entering its number. ProComm will configure itself as required and dial the number automatically. CAUTION: If you will be dialing other numbers manually (see next item) before you exit ProComm, check the configuration instructions in Section D below before proceeding.
   - For manual dialing, press <m>. At the "Number:" prompt, type the appropriate dial-in number followed by <Enter> . The University dial-in numbers are:

300/1200 bps	978-3959
2400 bps	978-7239
9600 bps	978-7220

Note: *If you have a 300 baud modem, you cannot dial in to MEDLINE.*

3. If your modem uses a speaker, you will hear dialing sounds and then either a busy tone or ringing.
   a. If you hear a busy tone, press <Alt><h> to hang up and then repeat the calling procedure. Please note that the U of T dial-up lines are heavily used. Do not be distressed if you encounter a busy signal; simply call again in a few minutes.
   b. When the call rings through, you will hear a high-pitched tone and, if you are using a 2400 baud modem, a short burst of static. This is followed on your screen by a message from your modem that might read CONNECT or perhaps CONNECT (speed).
      - If you are accessing VM/CMS or GPU, press <Enter> two or three times, a few seconds apart. This establishes an E71 connection to PACXNET.
      - If you are accessing FELiX or MEDLINE, press <;> (the semicolon) once. This establishes an N81 connection to PACXNET.
4. You will be prompted with something like:

```
UNIVERSITY OF TORONTO COMPUTING SERVICES PACXNET
*** NODE 1, SUBSCRIBER S0903010 - TYPE HELP FOR ASSISTANCE ***


SERVICE?
```

   Enter the name of the service you wish to access.

   If you are unfamiliar with the service you will be using, you may obtain from the UTCS Help Desk any of several separate documents with instructions for logging in to each service.

D. Choose the correct ProComm configuration

- Line Settings control how ProComm communicates with the host computers at U of T. Correct settings for particular services available to you are summarized in the chart at the end of this section. To see the line settings configuration menu, press:

  ☛ **<Alt><p>**

Accessing University of Toronto Library Services

March 1992

2nd ed.

©1992 University of Toronto Computing Services

This document may be used in conjunction with "Accessing University of Toronto Services through ProComm." It assumes that you have reached the SERVICE? prompt on PACXNET and that ProComm is correctly configured for the Library service you want. Commands you are to type appear in bold, preceded by a ☛. Function or other control keys appear in angle brackets, e.g. <Return> means "press the Return key."

FELiX

1. At the SERVICE? prompt enter:

   ☛ **felix <Enter>**

2. You will next see a welcoming screen and another CONNECTED prompt.
3. You will then be asked to enter the library branch you wish to access; valid branch codes are listed on the screen a few lines above the BRANCH prompt. Enter the appropriate branch code in UPPER CASE. Lower or mixed-case entries are not accepted.

MEDLINE

1. At the SERVICE? prompt enter one of:

☛	**medlin12 <Enter>**	(for 1200 bps)
☛	**medlin24 <Enter>**	(for 2400 bps)
☛	**medlin96 <Enter>**	(for 9600 bps)

2. You will next see a welcoming screen and some information about your connection.
3. You will be prompted to enter your terminal type. ProComm should be set up to emulate a VT-100 terminal; hence you should type:

   ☛ **26 <Enter>**

4. Once inside MEDLINE, use the key sequences <Esc><u> and <Esc><d> to move up and down respectively. Use <x> to highlight any options and <Enter> to select a highlighted option.

Hanging up and exiting ProComm

After you exit from the Library service, your microcomputer is still connected to PACXNET. To hang up, enter

☛ **<Alt><h>**

This will free the line for another user.

To exit ProComm, enter

☛ **<Alt><x>**

Getting help

If you encounter problems accessing these services, you may call 978-HELP (978-4357) between 12:00 noon and 6:00 pm Monday through Friday.

If you have difficulties or questions regarding the use of one of these systems, you may call Library Systems at 978-5555.

Accessing UTCS GP Unix Service

March 1992

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This document may be used in conjunction with "Accessing University of Toronto Services through ProComm." It assumes that you have reached the SERVICE? prompt on PACXNET and that ProComm is correctly configured for your modem and for VM / CMS. Commands you are to type appear in bold, preceded by a ☛. Function or other control keys appear in angle brackets, e.g. <Return> means "press the Return key."

A. Select VM/CMS

1. At the SERVICE? prompt, type:

   ☛ **cms <Enter>**

2. You will see a message with CONNECTED and some other information. Press <Enter> again and you will see a prompt for your terminal type. Enter:

   ☛ **procomm <Enter>**

   The VM/CMS greeting screen will appear

B. Log on to VM/CMS

Once you are connected to VM/CMS, you will see a screen of information giving you some information on how to log on. You may log on directly from this screen by entering your CMS userid.

1. Next to the USERID ==> prompt, enter the user identification code that was assigned to you by UTCS Accounting Services. If your userid is jones, you should type:

   ☛ **jones <Tab>**

2. The <Tab> moves the cursor down to the PASSWORD ===> prompt; type the password that was issued to you by Accounting Services and press

   ☛ **<Enter>**

   For security reasons, the password will not appear on the screen as you type it in. If you should press <Enter> instead of <Tab> after your userid, you will no longer see the password prompt, but you may still enter your password.

---

3. After you have entered your password, several lines will appear on your screen. Information such as the current date and time will appear. You are fully logged on to CMS when you see the Ready prompt.

C. The MAIL Command

If you are using CMS for electronic mail, type either of the following after the Ready prompt:

☛ **mail <Enter>** (to see if you have any messages)

☛ **mail name@address <Enter>** (to send a message to a particular address)

D. VM Screen Messages

While using CMS, you will probably see any of several different messages appear at the lower right corner of the screen. These STATUS NOTICES are described in Chapter 1 of the CMS Primer. The most common messages are explained below.

VM READ	generally means that CMS is awaiting input from you. This input can be in the form of a command or in response to a prompt from a program. You cannot receive messages at your screen until you press <Enter>.
RUNNING	tells you that CMS is either executing your program (e.g., Mail), or that CMS is ready for you to enter a command. You can receive messages at your screen without pressing <Enter>.
MORE	means there is more information to display than can fit onto one screen. To see the remainder of the information or the next page of the display, press <Clear>. You will have to keep pressing <Clear> until all the information to be displayed is exhausted. If you do not press either <Enter> or <Clear> within about one minute, you will hear a beep from the terminal, and the next screenfull of information will appear automatically.
HOLDING	means that the contents of your screen will remain on the screen until you press <Clear> or until the computer goes down.

Dual Processing Using Computer Monitors

A.F. Technologies announced this month a new technology that is expected to take the computing world by storm. The company has made a revolutionary advance in the area of dual functionality with computer monitors. "The ability to perform two entirely different non-interfering functions simultaneously will change the way we view our monitors forever!" said Kwiecien Olof, A.F.'s president.

The new monitors, aptly named *StaubSaugers*™, are a variation of the traditional CRT monitor. While allowing full computing functionality, the *StaubSauger*™ allows users to take advantage of the special lint-attracting feature developed by A.F. Technologies' Research & Development team. Available in a variety of sizes and colours (up to 256 million in some cases), the *StaubSauger*™ will coordinate with any office decor.

"The potential of this new technology is phenomenal," said a spokesperson for A.F. Technologies. Easily adaptable to the office environment, these monitors will be invaluable to employees for whom lint is not merely a problem, but an affliction. The de-linting procedure using the *StaubSauger*™ is simple: connect it to your computer, plug it in, turn it on, and hold the affected items of clothing up to the specially-treated glass surface. When you turn the unit off and look at the glass, you will be amazed to see how much dust and lint has been removed from your garment. The glass is then easily cleaned with a lint-free cloth and is ready for the next item. It can also be used for clothing you are already wearing. Simply stand in front of the screen and turn around so that all surfaces have been exposed to the screen's lint-attracting pull. Long sweaters? No problem. There is a tilt and swivel model designed to accommodate long sweaters and full-length coats.

The *StaubSauger*™ is being shipped with a custom install package that includes samples of various types of lint that you can use to set the screen's lint-attraction levels[1]. When used in conjunction with the monitor's special attraction-level dial, you can easily customize your *StaubSauger*™ to attract the kinds of lint that are a particular nuisance to you. (A curious aside: during laboratory tests, it was noticed that the monitor's background pattern had a profound effect on lint attraction. Muted shades and pastels provided minimal attraction, whereas psychedelic paisleys and loud plaids—of the type you have seen as seat covers for cars—gave the best results.)

A.F.'s researchers are currently working on a retro-fit device for portable computers that will allow you to replace LCD screens with special LAS (lint-attracting system) devices. When available, these kits will be particularly attractive to busy executives who need to de-lint while on the go (just before that important meeting!). It will come with an adapter that will allow you to plug it into a regular AC outlet or your car's cigarette lighter.

Given the newness of the technology, the prices are a bit steep and might not fit the average budget. Currently they range from $499 to $5500. Sizes range from 9" to 21".

StaubSauger™ is a registered trademark of A.F. Technologies. It has also received patent approval, which means that you need never worry about cheap imitations reducing the value of your investment.

[1] Cat and dog hair samples collected without cruelty to animals.

Vendor:
April Fool Technology

Address:
U of T Computing Services

Product:
Lint-attracting screens

Price:
$499-$5500

Availability:
None

Statistical Software News

Sandra Gardner
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SYSTAT News

UTCS has recently received SYSTAT 5.1.1 for Macintosh Networks. The default location of temporary files has been changed from the SYSTAT application folder to the 'boot' disk of the user's Macintosh. Also, for regular and network versions, the Macintosh SYSTAT install program has been improved to allow installation on the new Macintosh Quadras (which are based on the 68040 chip).

To upgrade your existing network software, please bring six formatted diskettes (for either the coprocessor or no coprocessor version, twelve diskettes if you want both versions) to the UTCS Information Office, 4 Bancroft Avenue, Room 201 during regular business hours.

Please call 978-4990 if you would like information on how to obtain a site licence version of SYSTAT (for individual machines or for a network).

SAS News

I will be unable to attend the SAS Users Group International (SUGI 17) conference this year. It is being held in Honolulu, Hawaii from April 12-15, 1992. There will be a Canadian Association of SAS Users (CASU) conference, however, in Quebec City, Quebec from September 13-14, 1992. If you are interested in attending either of these conferences, please call Sandra Gardner at 978-5128 or SAS Institute (Canada) Inc. at 443-9811 for further information.

SPSS News

If you use the SPSS/PC+ graph module with Harvard Graphics and you wish to upgrade to Harvard Graphics 3.0, you will have to upgrade the SPSS/PC+ graph module as well. UTCS is currently circulating SPSS/PC+ version 4.0.1, but the graph module contained in the circulating sets has only recently been upgraded to include a special batch file which will allow SPSS/PC+ to interface with Harvard Graphics 3.0. Please call the Information Office at 978-4990 to arrange to upgrade the SPSS/PC+ graph module.

The SPSS 1992 Academic User Conference for academic, institutional, and government SPSS users is being held at the University of Washington, Seattle from June 21-23, 1992. If you are interested in attending this conference, please call Sandra Gardner at 978-5128 for further information.

Maple Corner

News for Maple Users at U of T

Upgrade for Maple under PC DOS

Waterloo Maple Software has sent UTCS an updated version of Maple for PCs. This new version,1.1, now can be run under Windows (version 3.0 or higher) without any problems. A nice additional feature of the new version is the reorganized online help, which makes finding an item for which you need assistance much easier. Several small bugs have also been fixed. Users who would like to update to version 1.1 should contact me at 978-5045. Please note that this is not a true Windows implementation of Maple. A Windows implementation is in the works and will become available in June.

Maple for NeXT

A Maple implementation for NeXT computers is being released at the end of March.

Maple Summer Workshop

Waterloo Maple Software is organizing the Maple Summer Workshop. Described as "An annual gathering of Maple users, new and old", the workshop will be held from August 10-12, 1992 at the University of Waterloo. The workshop will consist of:

- 1.5 day Short Course: hands-on, intensive introduction to Maple, presented by knowledgeable experts;
- Presentations by invited speakers: scheduled speakers include Dr. William Kahan of the University of California at Berkeley; Dr. Marvin Weinstein, chief theoretical physicist for the Stanford Linear Accelerator Center (SLAC) at Stanford University; and Dr. Richard Pavelle, a leading expert in the field of computer algebra;
- Workshops: presentations, discussion groups, and demonstrations of issues relating to Maple's use in engineering, education, and science;
- Open Forum: an opportunity to exchange views with and direct questions to the foremost Maple experts.

The registration deadline is May 31. If you wish to receive more information you can contact me for a brochure describing the workshop or contact Waterloo Maple Software directly:

Darren Redfern
Waterloo Maple Software
160 Columbia Street West
Waterloo, Ontario
N2L 3L3
Phone: (519) 747-2373
Fax: (519) 748-5284

You can also send electronic mail to *msw92@daisy.uwaterloo.ca*.

Maple Instructional Materials Available through FTP

Although Maple is a very good product, there is a shortage of instructional materials to help novice users to learn the many capabilities offered by Maple. The tutorial introduction to Maple, *First Leaves,* helps somewhat but is not thorough.

To address this, Waterloo Maple Software has assembled a 27-page document, Maple *V: A Sample Interactive Session*. It is available through anonymous FTP. The IP number of the machine *daisy.uwaterloo.ca* is 129.97.140.58, and the file to FTP is */u/ftp/pub/samp.tar.Z* (tarred and compressed version) or /u/ftp/pub/samp*sessionV.ps* (full version). As the extension "ps" indicates, the second file is a PostScript file that must be printed on a PostScript printer. If you have problems with FTP or cannot print a PostScript file, contact Andrzej Pindor at 978-5045 for a photocopy of the document.

Andrzej Pindor
apindor@gpu.utcs.utoronto.ca

Maple Correction

Maureen Monné
monne@vm.utcs.utoronto.ca

In the March issue of *ComputerNews* we experienced some trouble with the printed format of the equations in the "Transforming Formulae" article. In the figures below you can see an example of how the formulae appeared in *ComputerNews* and how they are supposed to look.

If you would like a copy of the article that shows the formulae in their proper format, call Maureen Monné at 978-4034 or send electronic mail to *monne@vm.utcs.utoronto.ca.* I will be happy to send you a corrected copy.

Figure 1: What you saw in the March issue.

Now we combine only terms in the BOX:

```
> use(combine(_,ln));
                                                       2
                 /      /   ni         \2\        2 ni + 2 q - q
                 |- 1 + |-  —  + 1/2 q| | BOX(ln(————————))
                 \      \   q          / /                 2
                                                  2 ni - 2 q - q
           - 1/2 ————————————————————————
                                          q
```

Figure 2: What you should have seen.

Now we combine only terms in the BOX:

```
> use(combine(_,ln));
                                                                 2
                  /      /   ni         \2\        2 ni + 2 q - q
                  |- 1 + |- ---- + 1/2 q|  | BOX(ln(---------------))
                  \      \    q         / /                      2
                                                   2 ni - 2 q - q
            - 1/2 ---------------------------------------------------
                                           q
```

A Successor to LINPACK and EISPACK:

LAPACK Available

Andrzej J. Pindor
pindor@gpu.utcs.utoronto.ca

LAPACK, a successor to 1970's packages LINPACK and EISPACK, has been released by Numerical Algorithms Group (NAg). An announcement about the library of subroutines, which appeared in INTERNET's newsgroup 'sci.math.num-analysis', is given below.

> LAPACK is a transportable library of Fortran 77 subroutines for solving the most common problems in numerical linear algebra: systems of linear equations, linear least squares problems, eigenvalue problems, and singular value problems. It has been designed to be efficient on a wide range of modern high-performance computers.
>
> LAPACK is intended to be the successor to LINPACK and EISPACK. It extends the functionality of these packages by including driver routines, iterative refinement and error bounds for linear systems, the capability for finding selected eigenvalues and invariant subspaces, and condition estimation for the eigenproblem. LAPACK improves on the accuracy of standard algorithms for linear systems, for finding singular values and singular vectors of bidiagonal matrices, and for finding eigenvalues and eigenvectors of tridiagonal matrices. The algorithms and software in the package have been restructured to achieve high efficiency on vector processors, high-performance "superscalar" workstations, and shared memory multiprocessors. In addition to the LAPACK routines, comprehensive testing and timing suite is provided along with the LAPACK software.
>
> The LAPACK Users' Guide will be available from SIAM in or around May, 1992. The Users' Guide gives an informal introduction to the design of the algorithms and software, summarizes the contents of the package, describes conventions used in the software and documentation, and includes complete specifications for calling the routines.
>
> The LAPACK routines are available from netlib for users who require only selected pieces of the package. For a description of the contents of LAPACK, send email to netlib@ornl.gov, and in the mail message type: send index from lapack. A set of working notes are available from netlib as well and details can be found in the index to LAPACK.
>
> The complete LAPACK package can be obtained on magnetic media from NAG for a nominal handling charge. For further details, contact NAG at one of these addresses:
>
> NAG Inc
> 1400 Opus Place
> Suite 200
> Downers Grove, IL 60515-5702
> USA
> Tel: +1 708 971 2337
> Fax: +1 708 971 2706
>
> NAG Ltd
> Wilkinson House
> Jordan Hill Road
> Oxford OX2 8DR
> England
> Tel: +44 865 511245
> Fax: +44 865 310139
>
> NAG GmbH
> Schleissheimerstrasse 5
> W-8046 Garching bei Munchen
> Germany
> Tel: +49 89 3207395
> Fax: +49 89 3207396
>
> LAPACK has been funded in part by NSF, DOE, and DARPA, with developmental support from NAG Ltd., Cray Research, and many friends and colleagues around the world.
>
> Ed Anderson, Zhao-jun Bai, Chris Bischof, Jim Demmel, Jack Dongarra, Jeremy Du Croz, Anne Greenbaum, Sven Hammarling, Alan McKenney, Susan Ostrouchov, and Danny Sorensen

The numerical analysis group in the University of Toronto's Department of Computer Science has received a free copy of LAPACK. If you would like a copy (it is public domain, but the usual distribution is via tapes from NAg), contact Tom Fairgrieve in the Computer Science Department (*tff@cs* or 978-7816). The compressed tar file takes up approximately 6.5 megabytes (MB) of disk space. Uncompressed, it occupies 26MB. A full install requires nearly 70MB!

As stated in the preceding announcement, information about the contents of LAPACK and selected routines can be received via electronic mail from *netlib@ornl.gov*. If you need help in getting access to the information, please contact Andrzej Pindor at 978-5045 or via electronic mail at *pindor@gpu.utcs.utoronto.ca*.

PV-Wave Demonstration Tape

Andrzej Pindor
apindor@gpu.utcs.utoronto.ca

In the January/February 1991 issue of *ComputerNews* (#268), I reviewed a scientific visualization software program call PV-Wave. Recently I received from Precision Visuals, manufacturer of PV-Wave, a video tape that demonstrates many aspects of the software. Contact Andrzej Pindor at 978-5045 to arrange a demonstration or to borrow the tape.

ADDENDUM

Andrzej J. Pindor

The review of Models software which appeared in the March issue of *ComputerNews* was made possible by the courtesy of Lascaux Graphics, who provided me with a complimentary copy of the package.

UTCS Services

Facilities Managed by UTCS

Administrative Computing
- administrative ORACLE, IMS, DB2, TS0, Batch
- 3081K processor, 48 megabytes of memory
- MVS/XA operating system

Computer Disciplines Facility/PC
- 88 NEC computers connected in a Local Area Network:
  •Robarts Library (Rm. 1061A): 36 NEC PCs
  •St. Michael's College (Rm. 107): 26 NEC PCs
  •Sidney Smith (Rm. 1071): 23 NEC PCs
  •Trinity College (Rm. 024): 3 NEC PCs
- MS-DOS with Turing environment
- introductory computer science

Computers in Quantitative and Empirical Science Teaching (CQUEST)
- 52 DEC VT1000 X Window terminals, 20 DEC 2100 workstations connected in Local Area Network:
  •Ramsay Wright (Rm. 211, 213): 29 DEC VT1000s, 10 DEC 2100s
  •Sidney Smith (Rm. 2105): 20 DEC VT1000s, 10 DEC 2100s
  •Departmental use: 3 DEC VT1000s

Public Sites
- 50 XT100 terminals connected to PACX
  •Robarts Library (Rm. 1061A): 24 terminals
  •Engineering Annex (Rm. 107B): 12 terminals
  •St. Michael's College (Rm. 107): 9 terminals
  •Victoria College (1st floor): 3 terminals
  •Trinity College (Rm. 024): 2 terminals

Erindale College Systems
SUN 3/280, 16 megabytes of memory
- instructional and research access using UNIX

VAX 8200, 8 megabytes of memory
- instructional access using VMS
- research access

Institutional Relations System
VAX-11/750, 8 megabytes of memory
- database services to the owner departments using VMS

Ontario Centre for Large Scale Computation (OCLSC)
- Cray Research Inc. X-MP/28
- 2 processors, 8 megawords main memory
- solid state disk (SSD) with 64 megawords of storage
- UNICOS 5.1.11 operating system
- VAX 8350, MicroVAX-II, VAXstation 3200, and SUN-3/280 provide front-end services

> *The mission of Computing and Communications (UTCC) is to provide services, facilities, and expertise that ensures that the University of Toronto is a leader in the cost-effective utilization, management and evolution of information technology in support of the research, teaching, library, and administrative goals of the University.*

UTCS Centrally Owned and Managed

Systems

IBM VM/CMS
Technical Assistance: 978-6602
- General Purpose Timesharing environment
- Hub of the NetNorth network with access to BITNET, EARN and the Internet
- 4381-R03 processor with 32 megabytes of memory
- CP operating system, VM/SP HPO R6
- CMS timesharing system, VM/SP Release 6
- FTP and TELNET access to the campus Ethernet, as well as Internet
- RSCS spooling system, Release 2.3

GP UNIX
Technical Assistance: 978-8853
- General Purpose Timesharing under SUN UNIX 4.1.1
- SUN 4/490, 32 megabytes of memory
- access to Linotronic typesetter
- full access to USENET, an electronic technical information exchange facility
- full access to the Internet, UUCPNET, BITNET, CDNNET

Services

Facility Management Support
Primary Phone: 978-5050
- Installs, maintains and upgrades microcomputer systems, particularly Macintoshes, IBM PCs and compatibles on a contract basis or on a cost-per-call basis.

Network Development & Support
Primary Phone: 978-7087
- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- provides access between the IBM systems and machines using UNIX, VMS, and other operating systems. Ethernet, Pronet, and IBM TRN technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides consulting on local area networking
- provides access to NetNorth (BITNET), the North American Universities Network; ONET, the Ontario Regional Network; CA*net, the Canadian National Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis

User Support Services
Advising and Consulting
Primary Phone: 978-HELP
- The Advising and Consulting group is available to University faculty, staff, and graduate students.
- provides phone-in advising, and consultations by appointment for the following products:
  - operating systems: DOS, Macintosh System & Finder
  - packages and libraries: SAS, SPSS, SYSTAT
  - word processors: WordPerfect, Microsoft Word
  - databases: dBASE IV, FoxBASE
  - spreadsheet. Lotus 1-2-3, Microsoft Excel
  - file transfer: ProComm, MacKermit
  - electronic mail: QuickMail

Information Technology Support
Primary Phone: 978-5601
- selection consulting for hardware and software
- Micro Lab for evaluation of hardware and software
- CD-ROM access to software and information discs
- offers phototypesetting service

Administration and Information Services
Primary Phone: 978-4462
- administers Local Area Network of PCs for Education Facility
- administers Macintosh Education Facility
- administers site licences for various software packages
- provides short courses and seminars on the more popular services and software packages
- provides accounting services for all UTCS services
- provides accounting services for the University's telephone system on behalf of the Voice Communications Department
- produces *ComputerNews* and the UTCC newsletter

Telephone Listings

Consulting and Enquiries

Account & Access Code Enquiries	Jason Pante	BC101B	978-7148
Communication, Networking & Hardware	Rosi Derka-Tseu	BC105	978-7087
Erindale College	Joe Lim	ER2035	828-5311
IBM & Macintosh Maintenance	Rosi Derka-Tseu	BC103	978-1299
Information Office / Site Licences	Evelyn Ward	BC201	978-4990
Tape Library (Academic Services)	Susan Kovago	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
UTCS Noncredit Short Courses	Irene Rosiecki	BC217	978-4565

Consulting & Advising Services:	978-HELP
CMS, and GP UNIX userids:	ADVISOR
CMS Userid for mail problems:	POSTMSTR
Network Operations Centre	978-4621
System Status Enquiries (GP UNIX)	978-4318
System Status Enquiries (IBM)	978-7393
Interactive Services 300 (bps)	978-3959
Interactive Services 1200 (bps)	978-395
Interactive Services 2400 (bps)	978-7239
Interactive Services 9600 (bps)	978-7220

UTCS Directory

Management Office General Enquiry				978-4462
Director:	Dr. Warren Jackson	BC118	978-8948	wcj@vm.utcs.utoronto.ca
Associate Director, Operations:	Eugene Siciunas	BC116	978-5058	eugene@vm.utcs.utoronto.ca
Managers:				
Computer & Network Operations Support	Dr. Bob Chambers	MP350	978-7092	
Systems Support	Bill Lauriston	MP350	978-3579	bill@vm.utcs.utoronto.ca
Facility Management Support	Vera Cabanus	BC312A	978-7107	vcabanus@gpu.utcs.utoronto.ca
User Support Services	Don Gibson	BC312	978-7331	gibson@utcs.utoronto.ca
Network Development & Support	Norman Housley	BC121B	978-4967	norman@vm.utcs.utoronto.ca
Administration & Information Services	Ron Vander Kraats	BC121A	978-4428	rvk@vm.utcs.utoronto.ca

Legend:
BC = Bancroft Building
ER = Erindale
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

Terminal & Advising Sites

Names and Locations

Central Advising Office (CAO), 978-HELP
Engineering Annex (EA), 11 King's College Road, Room 107B
Erindale College (Erin), 828-5339, 3359 Mississauga Road North, Erindale Campus, Rooms 2037, 2045
Ramsay Wright, 25 Harbord St., Rooms 211, 213
Robarts, Robarts Library, 130 St. George St., Room 1061A
Sidney Smith (Sidney), 100 St. George St., Room 1071, 2105
St. Michael's College, 121 St. Joseph St., Room 107
Trinity College, 6 Hoskin Ave., Room 024
Victoria University, 73 Queen's Park Cres., 1st floor

Access Hours

Sites	Hours of Access				Restrictions*	Advising
	Mon-Thurs	Fri	Sat	Sun		
CAO	12:00-18:00	12:00-18:00	closed	closed	Research	978-HELP
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Erin (2045)	9:00-22:00	9:00-22:00	12:00-18:00	12:00-18:00	None	Rm 2005
Ramsay Wright	7:00-21:00	7:00-18:00	closed	closed	Undergrads	No
Robarts	8:30-24:00	8:30-24:00	9:00-22:00	13:00-22.00	None	978-HELP for Research
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St. Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	978-HELP for Research
Victoria	8:30-21:00	8:30-21:00	8:00-13:00	8:00-13:00	None	978-HELP for Research

Sites	Advising Hours
CAO	Monday through Friday, 12:00 - 18:00
Erin	Monday through Friday, 09:00 - 22:00

* Research includes graduates, faculty, staff

Computer and Printer Access

Sites	PACX	CDF/PC	CQUEST	Printers
EA	Y			Y*
Erin	Y			Y*
Ramsay Wright			Y	Y**
Robarts	Y	Y		Y*
Sidney		Y	Y	Y**
St. Michael's	Y	Y		Y*
Trinity	Y	Y		
Victoria	Y			

(Y=yes, N=no)
* Public Printers **Site Only

UTCS Site Licences

UTCS administers a number of software site licences available to the University of Toronto community. (Usually, this means faculty, staff, and graduate students, though some licences apply to undergraduate students also. See "Restrictions" in the table below.) The licences provide a variety of software at much-reduced cost. The majority of the licences must be renewed each year. Most are terminated when you leave U of T.

Each licence has a contract that you must complete. It outlines your responsibilities and any limitations in the use of the software. All contracts and software are available from the UTCS Information Office, 4 Bancroft Avenue, Room 201. To qualify as a member of the U of T community, you must provide a valid Employee number or Student number.

The table below describes the available site licences. The Restrictions column specifies who may purchase the licence. If the restriction is Research, the payment must come from research money. The Diskettes/Distribution column describes how you actually receive the software. Large packages, like SAS and SPSS, require that you borrow the diskettes, install the software, and return the diskettes. Smaller packages, consisting of up to five diskettes, require you to bring your own diskettes.

For more detailed information about these site licences, telephone the UTCS Information Office at 978-4990.

Site Licences at UTCS

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
Chaos in the Classroom I: Maps and Bifurcations					
PC	$12.00	Faculty, Staff, Graduate Students	One-time fee	One 5.25" or one 3.5"; bring own	Yes
CSLG					
There are over 250 individual software products included in this package.	$250.00	Departments with Digital hardware	One-time fee	Call 978-4595.	No
IMSL					
UNIX Class IVA machines; FORTRAN Subroutines IMSL (MATH, STAT, SFUN): Exponent Graphics: C BASE Library: Interactive Document Facility: Environmental Install. & Assurance Tests: Registration Fee:	 $935.00 $475.00 $445.00 $140.00 $140.00 $588.00	U of T-owned machines	One-time fee	Tape cartridge or network download	Yes

*Documentation available at UTCS

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
IMSL					
UNIX Class IVB machines; FORTRAN Subroutines		U of T-owned machines	One-time fee	Tape cartridge or network download	Yes
IMSL (MATH, STAT, SFUN):	$565.00				
Exponent Graphics:	$285.00				
C BASE Library:	$265.00				
Interactive Document Facility:	$87.00				
Environmental Install. & Assurance Tests:	$87.00				
Registration Fee:	$588.00				
IMSL					
PC; FORTRAN Subroutines		U of T-owned machines	One-time fee	Deposit $100; borrow and return diskettes	Yes
IMSL (MATH, STAT, SFUN):	$195.00				
Maple (single machine or network server)					
DecStation 2100, 3100 (Ultrix)	$300.00	Staff	One-time fee	Borrow and return diskettes, tape cartridge; network download	Yes
DecStation 5000, 5100 (Ultrix)	$500.00				
DecStation 5400, 5800 (Ultrix)	$760.00				
HP 9000/300, HP 9000, 400 (HP-UX 7.0)	$300.00				
HP 9000/700, HP 9000, 800 (HP-UX 7.0)	$430.00				
SUN 3 (SUN OS 4.0)	$240.00				
SUN 4, SPARCstation (SUN OS 4.0)	$300.00				
SGI Personal IRIS (Irix)	$300.00				
SGI Professional IRIS 50-80GT (Irix)	$500.00				
SGI Professional IRIS 120-240GT (Irix)	$760.00				
PC-386 (DOS; UNIX)	$200.00				
MIPS, RC3230 (UNIX)	$300.00				
IBM RS6000 model 320 (AIX)	$300.00				
Macintosh (Finder)	$130.00				
Note: station cost is half the single machine price.					

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
Novell Netware 3.11 — 20-user Licence					
PC; LAN		University Departments	One-time fee	Deposit $50; borrow and return diskettes	Yes
Server Licence:	$2400.00				
Upgrade Licence:	$1335.00				
Upgrade from Other Vendor's Software:	$2000.00				
Mac Netware 3.0:	$400.00				
Novell Netware 3.11 — 100-user Licence					
PC; LAN		University Departments	One-time fee	Deposit $50; borrow and return diskettes	Yes
Server Licence:	$4670.00				
Upgrade Licence:	$2000.00				
Upgrade from Other Vendor's Software:	$3336.00				
Mac Netware 3.0:	$400.00				
ProComm					
PC; Communications Note: Documentation on disk; part of package	Free	Faculty, Staff, Graduate Students, Undergraduate	N/A	Two 5.25"; bring own	Yes
QuickMail					
Mac; Electronic mail		Faculty, Staff	One-time fee	One 3.5"; bring own	No
Per user:	$35.00				
Upgrades:	$17.00				

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
SAS/PC					
PC; Statistical analysis		Faculty, Staff, Graduate Students, Undergraduate	July 1- June 30	Deposit per binder (Maximum $100); borrow and return diskettes	Yes
BASE/STAT/GRAPH/FSP:	$35.00				
IML module:	$22.00				
ETS module:	$35.00				
SAS/PC network					
PC; Statistical analysis		Faculty, Staff, Graduate Students	July 1- June 30	Deposit per binder (Maximum $100); borrow and return diskettes	Yes
Per station:	$17.00				
SAS/UNIX (Sun 3)					
UNIX; Statistical analysis		Faculty, Staff, Graduate Students	July 1- June 30	Tape cartridge	Yes
BASE/STAT/GRAPH:	$198.00				
FSP, IML modules:	ea. $70.00				
SAS/UNIX (Sun 4)					
UNIX; Statistical analysis		Faculty, Staff, Graduate Students	July 1- June 30	Tape cartridge	Yes
BASE/STAT/GRAPH:	$264.00				
FSP module:	ea. $92.00				
SPSS/PC					
PC; Statistical analysis		Research	Nov 1- Oct 31	Deposit max. $50; borrow and return diskettes	No
FullPackage:	$40.00				
Data Entry Module Only:	$20.00				
SPSS/PC network					
PC; Statistical analysis		Research	Nov 1- Oct 31	Deposit max. $50; borrow and return diskettes	No
FullPackage:	$20.00 per station, plus server				
Data Entry Module Only:	$10.00 per station, plus server				

***Documentation available at UTCS**

Site Licences at UTCS *cont.*

Product/ Operating System	Cost	Restrictions	Licence Period	Diskettes/ Distribution	*
SYSTAT					
Mac; Statistical analysis	$58.00	Faculty, Staff, Graduate Students	July 1-June 30	Six 800KB 3.5" diskettes; bring own	Yes
SYSTAT network					
Mac; Statistical analysis Price per station, plus server:	$29.00	Faculty, Staff, Graduate Students	July 1-June 30	Six 800KB 3.5" diskettes; bring own	Yes
UNIX V, Release 4					
Operating System	$18.00	Faculty, Staff, Research	One-time fee	*Send electronic mail to molnar@gpu.utcs.utoronto.ca*	No
WATFOR-77					
PC; FORTRAN compiler [$35 WATFOR-87 (math co-processor)] GKS (Graphics Kernal System)	$35.00 Add $5.00	Research	July 1-June 30	Two-three 5.25" diskettes; bring own	Yes
WordPerfect (individual & networked machines)					
PC; WordProcessing New, per machine: Upgrade, per machine:	$42.00 $15.00	Faculty, Staff	One-time fee	Deposit $25; borrow and return diskettes	Yes

***Documentation available at UTCS**

PC Maintenance

Below is a listing of microcomputer equipment which UTCS Field Service covers under yearly maintenance contracts. All contracts are based on a minimum 12 month period. Service calls are handled on a first-come, first-served basis. Average response time is four hours. Equipment must be certified as operational prior to commencement of a maintenance contract. (There is no extra charge for this service.) Please contact UTCS Field Service at 978-5050 or 978-6486 to obtain service and pricing information.

IBM PC or Compatible Equipment

Systems
IBM PC or Compatible
IBM PC/XT or Compatible
IBM PC/AT or Compatible
IBM PS/2 - Model 25
IBM PS/2 - Model 30
IBM PS/2 - Model 50

Disk Drives
360KB & 1.2MB 5.25-inch Floppy
720KB & 1.4MB 3.5-inch Floppy

Hard Disk Drives
20,30,40,60 & 80 Megabyte

Displays
Monochrome
CGA / EGA / VGA Colour
PS/2 Monochrome
PS/2 Colour Display

Modems
1200 & 2400 baud

Laser Printers
HP LaserJet
HP LaserJet II
PS Jet +
QMS PS 800
QMS PS 800+
QMS 810

Dot Matrix Printers
C-ITOH F10-40 & F10-55
Epson RX80, FX80 & FX100
Epson LQ800, LQ1000, LQ1500
IBM Proprinter & Proprinter XL
NEC 3550, P5 & P6
Panasonic KX-P1091 & KX-P1092
Roland PR-1012
Toshiba P340, P341, P350 & P1351

Apple Macintosh Equipment

Systems
Mac 128, 512, Plus
Mac Classic - All Models
Mac LC - All Models
Mac SE - All Models
Mac SE/30 - All Models
Mac II, IIx, IIcx, IIci, IIsi, IIfx

Disk Drives
400KB, 800KB 3.5-inch Floppy
1.4MB 3.5-inch Floppy

Hard Disk Drives
20,30,40,60 & 80 Megabyte

Displays
Apple Mac 12-inch Monochrome
Apple Mac 12-inch RGB
Apple High-Res 12-inch Monochrome
Apple High-Res 13-inch Colour

Modems
1200 & 2400 baud

Laser Printers
Personal LaserWriter LS
Personal LaserWriter NT
LaserWriter
LaserWriter Plus
LaserWriter IINT
LaserWriter IINTX

Dot Matrix Printers
ImageWriter I
ImageWriter II
ImageWriter II/L
Apple StyleWriter

Support for UNIX

We support timesharing on GP UNIX under Sun OS 4.1.1.

Support for VM/CMS

We support CMS release 6.0 under CP/HPO releave 6.0 For CMS support, call Supervisor Ted Sikorski at 978-6602.

Support by UTCS Advising

The following are microcomputer software packages supported by the UTCS Advising and Consulting Group. This service is available to University of Toronto faculty, staff, and graduate students. For assistance with the products listed below, call 978-HELP, Monday through Friday, between 12:00 noon and 6:00 p.m.

Package/Compiler	Version	Environment
Communications		
File Transfer & Terminal Emulators		
MacKermit	0.9(40)	Macintosh
ProComm	TU 2.4.2	MS-DOS
Database Managers		
dBASE IV	1.1	MS-DOS
FoxBASE Mac	2.01	Macintosh
Electronic Mail		
QuickMail	2.2.3	Macintosh
Operating Systems		
IBM PC & Compatibles		
IBM PC-DOS	4.0	n/a
Microsoft MS-DOS (incl. IBM PC-DOS)	3.3	n/a
Macintosh		
Finder	6.0.X	n/a
MultiFinder	6.0.X	n/a
System	6.0.X	n/a
Spreadsheet & Charting		
Lotus 1-2-3	2.02	MS-DOS
Microsoft Excel	2.2a, 3.0	Macintosh
Statistical		
SAS/PC	6.04	MS-DOS
SPSS/PC+	4.0	MS-DOS
SYSTAT	3.2, 5.1	Macintosh
SAS	5.18, 6.07*	VM/CMS
SPSS^x	3.1, 4.1	VM/CMS
SAS	6.03, 6.07	UNIX, Sun3, Sun4
Word Processing		
Microsoft Word	4.0	Macintosh
WordPerfect	5.1	MS-DOS

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